REMARKS

This application has been carefully reviewed in light of the Office Action dated September 5, 2008. Claims 1 and 3 to 18 are pending in the application. Claims 1, 13 and 14 are the independent claims. Reconsideration and further examination are respectfully requested.

Claims 1, 3 to 7 and 9 to 20[1] were rejected under 35 U.S.C. § 103(a) over U.S. Patent Application Publication No. 2002/0181765 (Mori) in view of U.S. Patent Application Publication No. 2002/0181775 (Matsugu). Claim 8 was rejected under 35 U.S.C. § 103(a) over Mori in view of Matsugu and further in view of U.S. Patent No. 5,570,434 (Badique). Reconsideration and withdrawal of the rejections are respectfully requested.

The present invention is directed to pattern identification, and more specifically is directed to identifying a pattern of input data by hierarchically extracting features of the input data. A feature of a first layer is extracted and a distribution of a feature extraction result of the first layer is analyzed. A respective likelihood of a plurality of categories for features of a second layer higher than the first layer is then calculated on a basis of the analyzed distribution of the feature extraction of the first layer. A category is then selected, from among the plurality of categories, whose calculated likelihood is not less than a predetermined value, and an only feature which belongs to the selected category is extracted from the second layer.

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[1] [*sic*] Claims 19 and 20 are not pending, such that the rejection has been treated as a rejection of Claims 1, 3 to 7 and 9 to 18.

By virtue of the foregoing arrangement, it is ordinarily possible to refine a feature extracted from input data and to perform a pattern identification at a high speed with high accuracy.

Referring specifically to claim language, amended independent Claim 1 is directed to a pattern identification method of identifying a pattern of input data by hierarchically extracting features of the input data. The method includes a first feature extraction step of extracting a feature of a first layer, and an analysis step of analyzing a distribution of a feature extraction result in the first feature extraction step. The method further includes a calculation step of calculating a respective likelihood of a plurality of categories for features of a second layer higher than the first layer on the basis of the distribution analyzed in the analysis step. In addition, the method includes a selection step of selecting a category, from among the plurality of categories, whose calculated likelihood is not less than a predetermined value. The method also includes a second feature extraction step of extracting an only feature which belongs to the selected category from the second layer.

Amended independent Claims 13 and 14 are directed towards apparatus and computer medium claims, respectively, substantially in accordance with the method of Claim 1.

The applied art, alone or in any permissible combination, is not seen to disclose or to suggest the features of Claims 1, 13 and 14, and in particular, is not seen to disclose or to suggest at least the features of (i) calculating a respective likelihood of a plurality of categories for features of a second layer higher than a first layer on a basis of an analyzed distribution of a feature extraction of the first layer, (ii) selecting a category, from

among the plurality of categories, whose calculated likelihood is not less than a predetermined value, and (iii) extracting an only feature which belongs to the selected category from the second layer.

Pages 3 and 4 of the Office Action concede that Mori does not teach calculating likelihoods of a plurality of categories for features of a second layer higher than a first layer on a basis of an analyzed distribution of a feature extraction of the first layer, determining a category from among the plurality of categories, whose calculated likelihood is not less than a predetermined value, and extracting a feature which belongs to the determined category. Applicants agree, and further submits that in the context of the amended claim language, Mori therefore also cannot disclose or suggest (i) calculating a respective likelihood of a plurality of categories for features of a second layer higher than a first layer on a basis of an analyzed distribution of a feature extraction of the first layer, (ii) selecting a category, from among the plurality of categories, whose calculated likelihood is not less than a predetermined value, and (iii) extracting an only feature which belongs to the selected category from the second layer. Nevertheless, the Office Action asserts that Matsugu (paragraphs [0053] and [0068]) discloses the above-described calculating, selecting, and extracting features of Claims 1, 13 and 14.

However, the cited portions of Matsugu are merely seen to disclose that feature detection layers are connected (interconnected) so that the feature detection layers can receive outputs from feature detection cells, belonging to same channels, in a feature consolidation layer. (See paragraph [0053] of Matsugu). In addition, if a high-order pattern of a category is detected, in a local area, with an output level higher than a predetermined threshold value, then a detection probability or detection likelihood of the

category and position information of an object detected in that local area are output to a time-sequential consolidation module. (See paragraph [0068] of Matsugu). However, Matsugu is not seen to disclose (i) calculating a respective likelihood of a plurality of categories for features of a second layer higher than a first layer on a basis of an analyzed distribution of a feature extraction of the first layer, (ii) selecting a category, from among the plurality of categories, whose calculated likelihood is not less than a predetermined value, and (iii) extracting an only feature which belongs to the selected category from the second layer.

The remaining applied reference, namely Badique, is not seen to cure the above-described deficiencies of Mori and Matsugu. In this regard, Badique is merely seen to disclose that face recognition is performed using centers of gravity. The centers of gravity located in the face area are combined to form triplets, and it is determined whether these triplets can correspond to the eyes and the mouth of a human face on the basis of their geometrical position. (See column 9, lines 63 to 66 of Badique). However, Badique is not seen to add anything that, when combined with Mori and/or Matsugu would have resulted in at the least the features of (i) calculating a respective likelihood of a plurality of categories for features of a second layer higher than a first layer on a basis of an analyzed distribution of a feature extraction of the first layer, (ii) selecting a category, from among the plurality of categories, whose calculated likelihood is not less than a predetermined value, and (iii) extracting an only feature which belongs to the selected category from the second layer.

Accordingly, independent Claims 1, 13 and 14 are believed to be in condition for allowance and Applicants respectfully request same.

The other claims in the application are each dependent from the independent claims discussed above and are therefore believed to be allowable over the applied art for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

As a formal matter, Applicants request that the Examiner provide an indication in the next communication acknowledging Applicants' claim to priority under 35 U.S.C. § 119 and receipt of the certified copy of the priority document. This is a second request.

No other matters being raised, it is believed that the entire application is fully in condition for allowance, and such action is courteously solicited.

Applicants' undersigned attorney may be reached in our Costa Mesa, California office at (714) 540-8700. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

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